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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/802,660	03/09/2001	Douglas M. Dillon	PD-N94025H	7532

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THE DIRECTV GROUP INC
PATENT DOCKET ADMINISTRATION RE/R11/A109
P O BOX 956
EL SEGUNDO, CA 90245-0956

EXAMINER	
ELMORE, JOHN E	

ART UNIT	PAPER NUMBER
2134	

DATE MAILED: 05/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/802,660	DILLON ET AL.	
	Examiner	Art Unit	
	John Elmore	2134	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 March 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03/02/2001*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 31-45 have been examined.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claim 31 is rejected under 35 U.S.C. 103(a)** as being unpatentable over Woodworth et al. (US 4,876,737), hereafter Woodworth, in view of Paik et al. (US 5,321,725), hereafter Paik, and further in view of Kelkar et al. (US 5,138,659), hereafter Kelkar.

Woodworth teaches an apparatus comprising:

a connector (LNDC 18) that is configured to connect said apparatus to an antenna device comprising an antenna (antenna 16) capable of receiving a signal from a satellite (col. Fig. 1; col. 2, lines 56-57; col. 5, lines 4-9);

a tuner (incorporated in TDC 26) that is configured to receive a satellite signal from said connector and to perform tuning on the satellite signal (Fig. 3; col. 5, lines 4-26); and

a demodulator (data demodulator 32) that is configured to receive the tuned satellite signal from said tuner and to perform demodulation on the tuned

satellite signal, thereby outputting a demodulated data stream, wherein the demodulation is performed in accordance with control by a computer (demodulator 32 controlled by computer 254 in TDC 26; Fig. 2; col. 2, lines 2-12; col. 5, lines 37-50; col. 6, lines 14-23).

But Woodworth does not explain a forward error corrector that is configured to receive the demodulated data stream from said demodulator and to perform forward error correction on the demodulated data stream, thereby outputting a corrected data stream, a decryptor that is configured to receive the corrected data stream from said forward error corrector and to perform decryption upon encrypted frames within the corrected data stream, thereby outputting decrypted frames, and an interface that is configured to receive the decrypted frames from said decryptor and to output the decrypted frames to the computer.

However, Paik teaches an apparatus for the purpose of more reliably communicating digital data over a broadcast communications channel (col. 4, lines 28-44) comprising a forward error corrector (196) that is configured to receive the demodulated data stream from said demodulator and to perform forward error correction on the demodulated data stream, thereby outputting a corrected data stream (Fig. 13; col. 18, lines 10-36).

And Kelkar teaches an apparatus comprising a decryptor (decrypter 24 for access control data and descrambler 18 for video data) that is configured to receive the corrected data stream from said forward error corrector and to perform decryption upon encrypted frames within the corrected data stream,

thereby outputting decrypted frames, and an interface that is configured to receive the decrypted frames from said decryptor and to output the decrypted frames to a computer (decrypted access control data frames output to control module 30; Fig. 1; col. 4, lines 32-47; col. 5, lines 15-16) for the purpose of restricting the use of digital data sent over a broadcast communications channel to authorized subscribers (e.g. encryption of access control data; col. 1, lines 37-66; col. 3, lines 10-18 and 48-51).

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify Woodworth with the teachings of Paik and Kelkar to provide an apparatus comprising a forward error corrector that is configured to receive the demodulated data stream from said demodulator and to perform forward error correction on the demodulated data stream, thereby outputting a corrected data stream, a decryptor that is configured to receive the corrected data stream from said forward error corrector and to perform decryption upon encrypted frames within the corrected data stream, thereby outputting decrypted frames, and an interface that is configured to receive the decrypted frames from said decryptor and to output the decrypted frames to the computer. One would be motivated to do so to more reliably and securely send digital data over a broadcast communications channel to subscribers.

4. **Claims 32, 33, 35, 36 and 42-44 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Woodworth in view of Paik.

Regarding claim 32, Woodworth teaches an apparatus comprising:

a tuner (incorporated in TDC 26, including VHF downconverter 220) that is configured to receive the output of a low noise block element of a satellite antenna device and perform tuning upon the output to select a signal (Fig. 1 and 6; col. 5, lines 4-26; col. 9, lines 32-47);

a data demodulator (32) that is configured to receive the signal selected by said tuner and to convert the signal into a demodulated data stream (Fig. 1; col. 5, lines 37-41);

a frame processor (incorporated in TDC 26, including HDLC 70) that is configured to identify frames in the corrected data stream, each frame including an address header for identifying the data stream to which the frame belongs, a data field containing data, and a checksum field, said frame processor being further configured to select frames in accordance with the address header (Fig. 5A and 15B; col. 8, lines 26-31; col. 29, line 41, through col. 30, line 46); and

an output unit (incorporated as components in the TDC 26) that is configured to connect said apparatus to a computing device to output to the computing device frames output by said frame processor and information for monitoring said data demodulator (Fig. 2 and 5A; col. 2, lines 2-12; col. 5, lines 37-58; col. 6, lines 14-23).

But Woodworth does not explain a forward error corrector that is configured to receive the demodulated data stream from said demodulator and to perform forward error correction on the demodulated data stream to output a corrected data stream, said forward error corrector comprising a Viterbi soft-

decision decoder, depuncture logic, a deinterleaver, and a Reed-Solomon decoder.

However, Paik teaches an apparatus for the purpose of more reliably communicating digital data over a broadcast communications channel (col. 4, lines 28-44) comprising a forward error corrector (196) that is configured to receive the demodulated data stream from said demodulator and to perform forward error correction on the demodulated data stream to output a corrected data stream, said forward error corrector comprising a Viterbi soft-decision decoder, depuncture logic, a deinterleaver, and a Reed-Solomon decoder (Fig. 3 and 13; col. 10, lines 32-44; col. 18, lines 1-36).

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify Woodworth with the teaching of Paik to provide an apparatus comprising a forward error corrector that is configured to receive the demodulated data stream from said demodulator and to perform forward error correction on the demodulated data stream to output a corrected data stream, said forward error corrector comprising a Viterbi soft-decision decoder, depuncture logic, a deinterleaver, and a Reed-Solomon decoder. One would be motivated to do so to more reliably send digital data over a broadcast communications channel.

Regarding claim 33, the modified device of Woodworth and Paik is relied upon as applied to claim 32, and Woodworth and Paik further teach a power unit for providing a voltage to the low noise block element of the satellite antenna

device (Woodworth, power supply A10 in Fig. 6 provides voltage to LNDC 18). Therefore, such a claim also would have been obvious.

Regarding claim 35, the modified device of Woodworth and Paik is relied upon as applied to claim 32, and Woodworth and Paik further teach that said output unit comprises a bus interface (within the TDC 26, computer 102 in MPU 254 connects to output unit components, e.g. HDLC 70, via a bus interface; Woodworth, Fig. 5A and 6). Therefore, such a claim also would have been obvious.

Regarding claim 36, the modified device of Woodworth and Paik is relied upon as applied to claim 32, and Woodworth and Paik further teach that said output unit also outputs to the computing device information for monitoring said tuner (computer 102 in MPU 254 monitors the tuner, in particular VHF downconverter 220, in the TDC 26; Woodworth, Fig. 5A and 6). Therefore, such a claim also would have been obvious.

Regarding claim 42, the modified device of Woodworth and Paik is relied upon as applied to claim 32, and Woodworth and Paik further teach that said frame processor discards unselected frames to prevent the unselected frames from being sent to the computing device (frames with mismatching address are discarded; Woodworth, col. 30, lines 38-64; Fig. 15A-15E). Therefore, such a claim also would have been obvious.

Regarding claim 43, the modified device of Woodworth and Paik is relied upon as applied to claim 32, but Woodworth and Paik do not explain that said output unit buffers the frames output by same frame processor. The Examiner

takes official notice that it would be obvious to one of ordinary skill in the art at the time the invention was made for the output unit to buffer the frames output by the frame processor for the motivation to prevent loss of frame data when the computer processor is unable to read a frame from the communication channel (e.g. bus) during the time period that it is available on the channel.

Regarding claim 44, the modified device of Woodworth and Paik is relied upon as applied to claim 43, but Woodworth and Paik do not explain that said output unit buffers the frames output by same frame processor. The Examiner takes official notice that it would be obvious to one of ordinary skill in the art at the time the invention was made for the output unit to interrupt the computing device (102) to indicate that the buffered frames are ready to be retrieved for the motivation to prevent buffer overrun during a period when the computer processor is busy with another task.

5. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woodworth in view of Paik, as applied to claim 32, further in view of Allen (US 4,977,618) and further in view of Anano (JP 62029344).

Woodworth and Paik do not explain that said apparatus is an adapter card.

However, Allen (US 4,977,618) teaches a wireless digital data communications apparatus that is integrated with a modem device that is coupled to a network adapter card in a personal computer (Fig.2; col. 4, lines 42-49). And Anano teaches a modem device incorporated as an adapter card in a

personal computer (see abstract constitution, paragraph 1, lines 1-5) for the purpose of saving mounting space and manufacturing costs (see abstract purpose, paragraph 1, lines 1-4).

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the modified device of Woodworth and Paik with the teachings of Allen and Anano to provide that said apparatus is an adapter card. One would be motivated to do so in order to save mounting space and manufacturing costs.

6. **Claims 37, 39-41 and 45 are rejected under 35 U.S.C. 103(a)** as being unpatentable over Woodworth in view of Paik, as applied to claim 32, and further in view of Kelkar.

Regarding claim 37, Woodworth and Paik do not explain that said frame processor further comprises a decryptor that is configured to decrypt the selected frames in accordance with a key, the key being determined in accordance with the address header.

However, Kelkar teaches an apparatus comprising a decryptor (decrypter 24 for access control data and descrambler 18 for video data) that is configured to decrypt the selected frames in accordance with a key, the key being determined in accordance with the address header (Fig. 1; col. 4, lines 32-47; col. 5, lines 15-16; also incorporated by reference Gilhousen, US 4613901, col. 3, lines 34-49) for the purpose of restricting the use of digital data sent over a

broadcast communications channel to authorized subscribers (e.g. encryption of access control data; col. 1, lines 37-66; col. 3, lines 10-18 and 48-51).

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the modified device of Woodworth and Paik with the teaching of Kelkar to provide that said frame processor further comprises a decryptor that is configured to decrypt the selected frames in accordance with a key, the key being determined in accordance with the address header. One would be motivated to do so in order to restrict the use of digital data sent over a broadcast communications channel to authorized subscribers.

Regarding claim 39, the modified device of Woodworth, Paik and Kelkar is relied upon as applied to claim 37, and Woodworth, Paik and Kelkar further teach that the key is obtained through a message received via satellite (Kelkar, col. 4, lines 32-37). Therefore, such a claim also would have been obvious.

Regarding claim 40, the modified device of Woodworth, Paik and Kelkar is relied upon as applied to claim 37, but Woodworth, Paik and Kelkar do not explain that said frame processor has a burned-in master key relating to the decryption, each said apparatus having a unique such master key.

However, Woodworth, Paik and Kelkar teach that a unique address and a unique key seed number, which are used to generate a master key, are burned-in to the apparatus (Gilhousen, col. 3, lines 39-54, incorporated by reference in Kelkar). The Examiner takes official notice that it would have been obvious one of ordinary skill in the art at the time the invention was made to generate the master key and burn it into the apparatus prior to distribution of the apparatus to

the subscriber. One would be motivated to do so in order to lower costs and simplify key distribution.

Regarding claim 41, the modified device of Woodworth, Paik and Kelkar is relied upon as applied to claim 37, but Woodworth, Paik and Kelkar do not explicitly explain that said decryptor decrypts frames on a frame-by-frame basis without buffering plural encrypted frames.

However, Woodworth, Paik and Kelkar teach that the broadcast signal is digital (e.g. HDTV, Kelkar, col. 3, lines 14-15 and col. 4, lines 31-32) and wherein both the video data and the access control data are incorporated within the same signal (Kelkar, col. 3, lines 44-48), and also that the video data is decrypted using keys derived from access control data that are different than the master key used to decrypt the access control data (Kelkar, Fig. 1; col. 4, lines 32-36; col. 5, lines 19-22). One of ordinary skill in the art at the time the invention was made would recognize that the decryptor would decrypt frames on a frame-by-frame basis without buffering plural encrypted frames for the motivation that any two consecutive frames may require decryption using different keys. Therefore, such a claim also would have been obvious.

Regarding claim 45, this is the same as claim 37 with the additional limitation that the output of the low noise block element of the satellite antenna device that is downconverted to an IF output is between 950 and 1450 MHz. Woodworth, Paik and Kelkar teach that the output of the low noise block element of the satellite antenna device is between 950 and 1700 MHz (Woodworth, col. 5,

lines 7-8). Therefore, for reasons provided above, such a claim also would have been obvious.

7. **Claim 38 is rejected under 35 U.S.C. 103(a)** as being unpatentable over Woodworth in view of Paik and further in view of Kelkar, as applied to claim 37, and further in view of Iiyama et al. (JP 04359283), hereafter Iiyama.

Woodworth, Paik and Kelkar do not explain that the key is determined using a smart card device.

However, Iiyama teaches a satellite broadcast receiver apparatus wherein a cryptographic key used to decrypt the broadcast signal is determined using a smart card (see abstract constitution, paragraph 1) for the purpose of increasing the security of key data, particularly against wiretapping (see abstract purpose, paragraph 1).

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the modified device of Woodworth, Paik and Kelkar with the teaching of Iiyama to provide that the key is determined using a smart card device. One would be motivated to do so in order to increase the security of key data used for decrypting satellite broadcast data, particularly against wiretapping.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hamilton et al. (US 5,504,816) discloses an apparatus for receiving satellite broadcast data comprising a tuner, demodulator, Viterbi and Reed-Solomon decoder, frame processor with forward error correction and a decrypter.

Hostetter et al. (US 5,313,457) discloses an apparatus for receiving satellite broadcast data comprising a tuner, demodulator, Viterbi and Reed-Solomon decoder, and a frame processor.

Heichler (US 4,939,734) and Heichler et al. (US 5,029,331) disclose a method for decoding digital data received by satellite transmission using Viterbi and Reed-Solomon decoders and depuncture logic.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Elmore whose telephone number is 571-272-4224. The examiner can normally be reached on M 10-8, T-Th 9-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Greg Morse can be reached on 571-272-3838. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JE

GREGORY MORSE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100